

FIG. 1

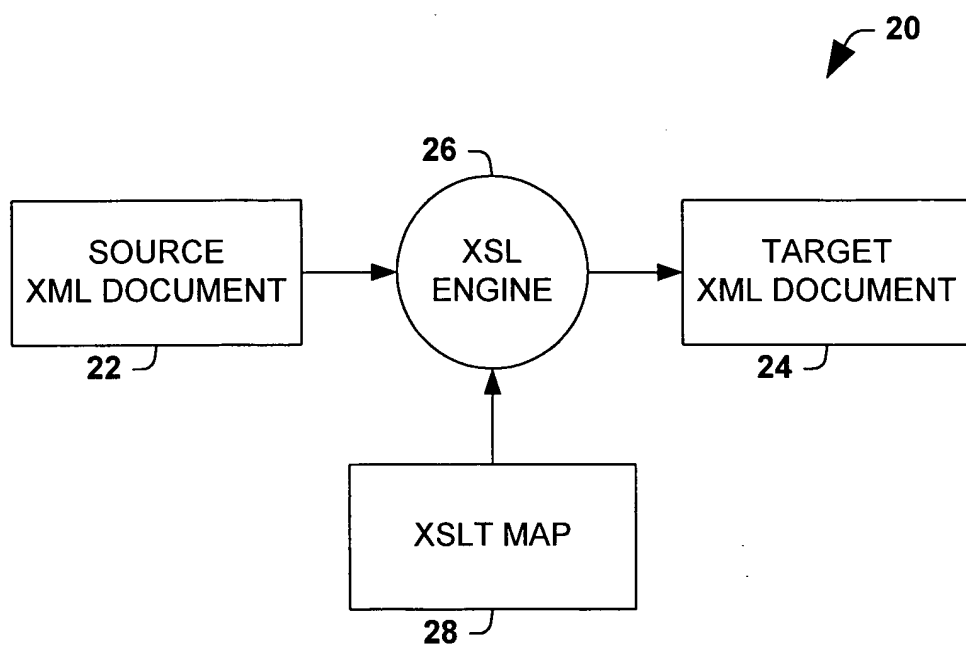
[illegible]

FIG. 2

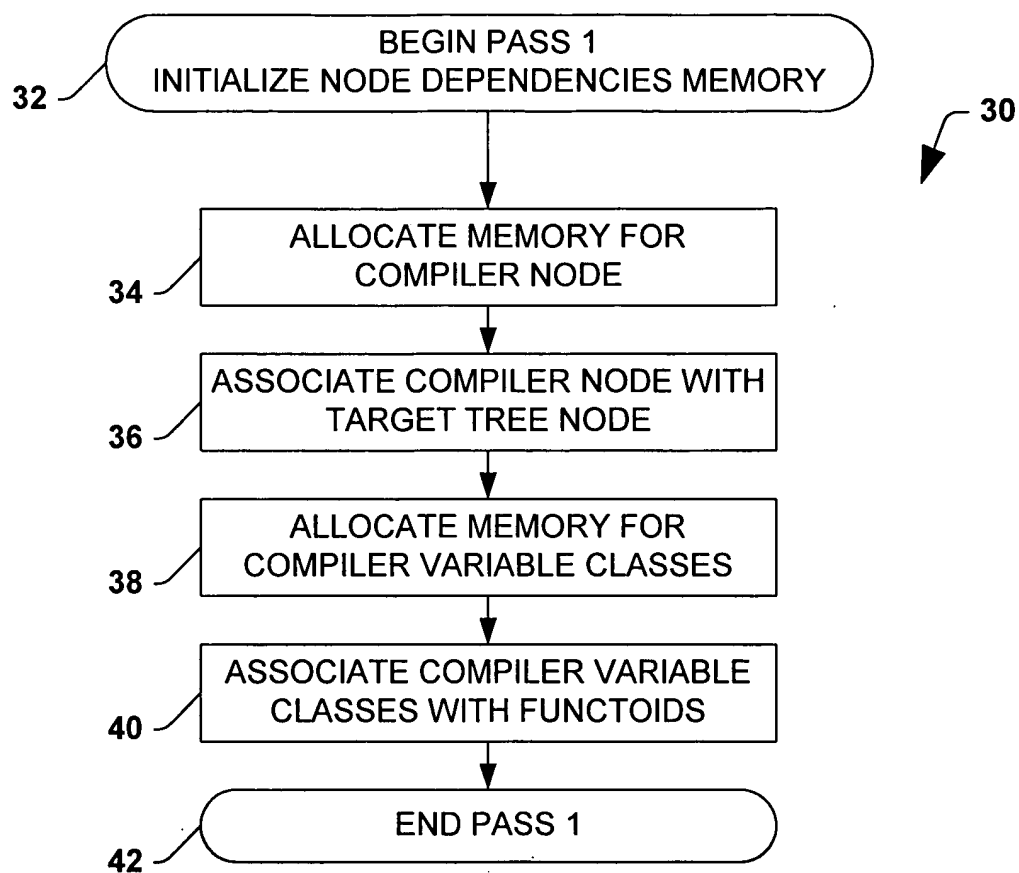


FIG. 3

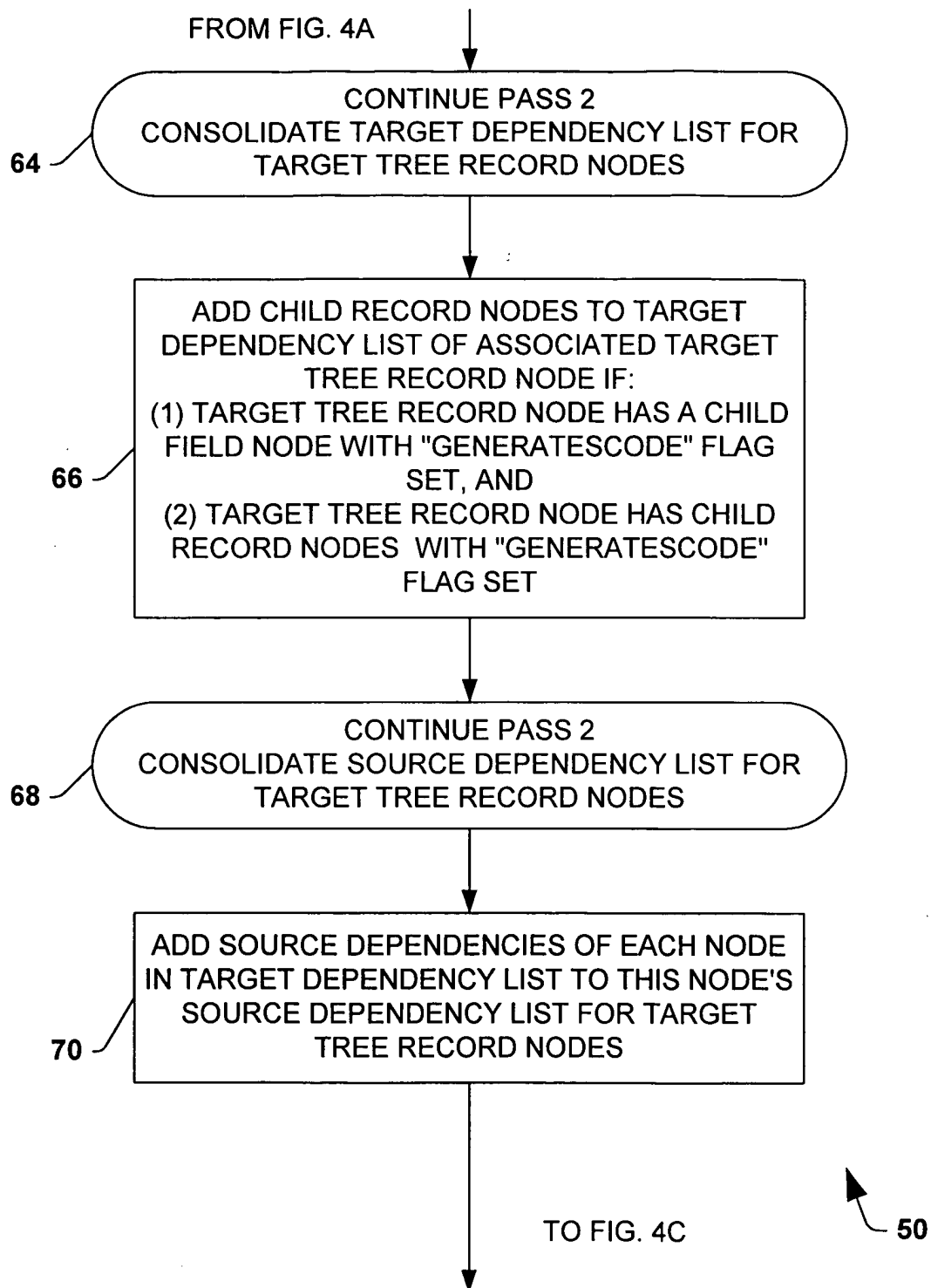


FIG. 4B

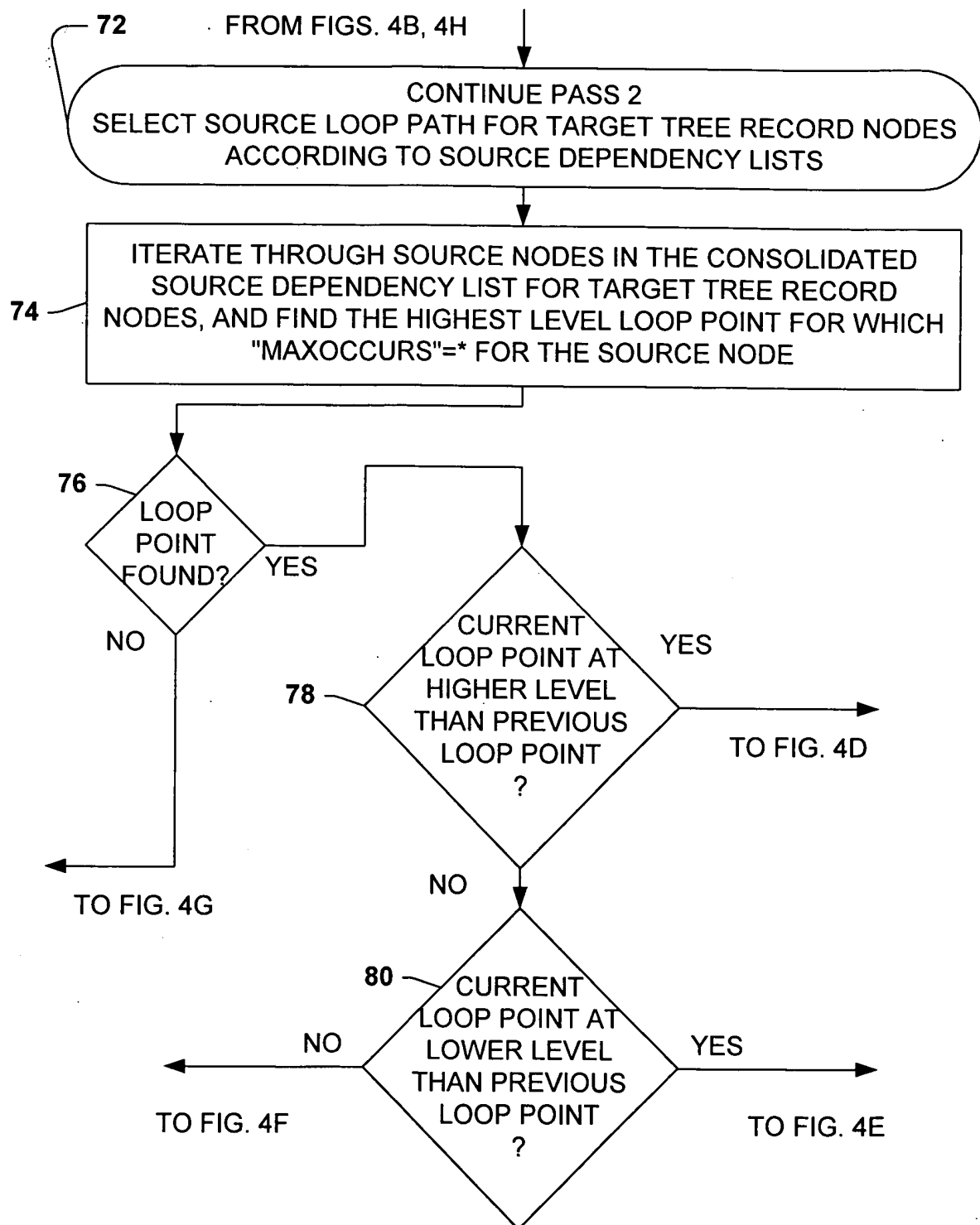


FIG. 4C

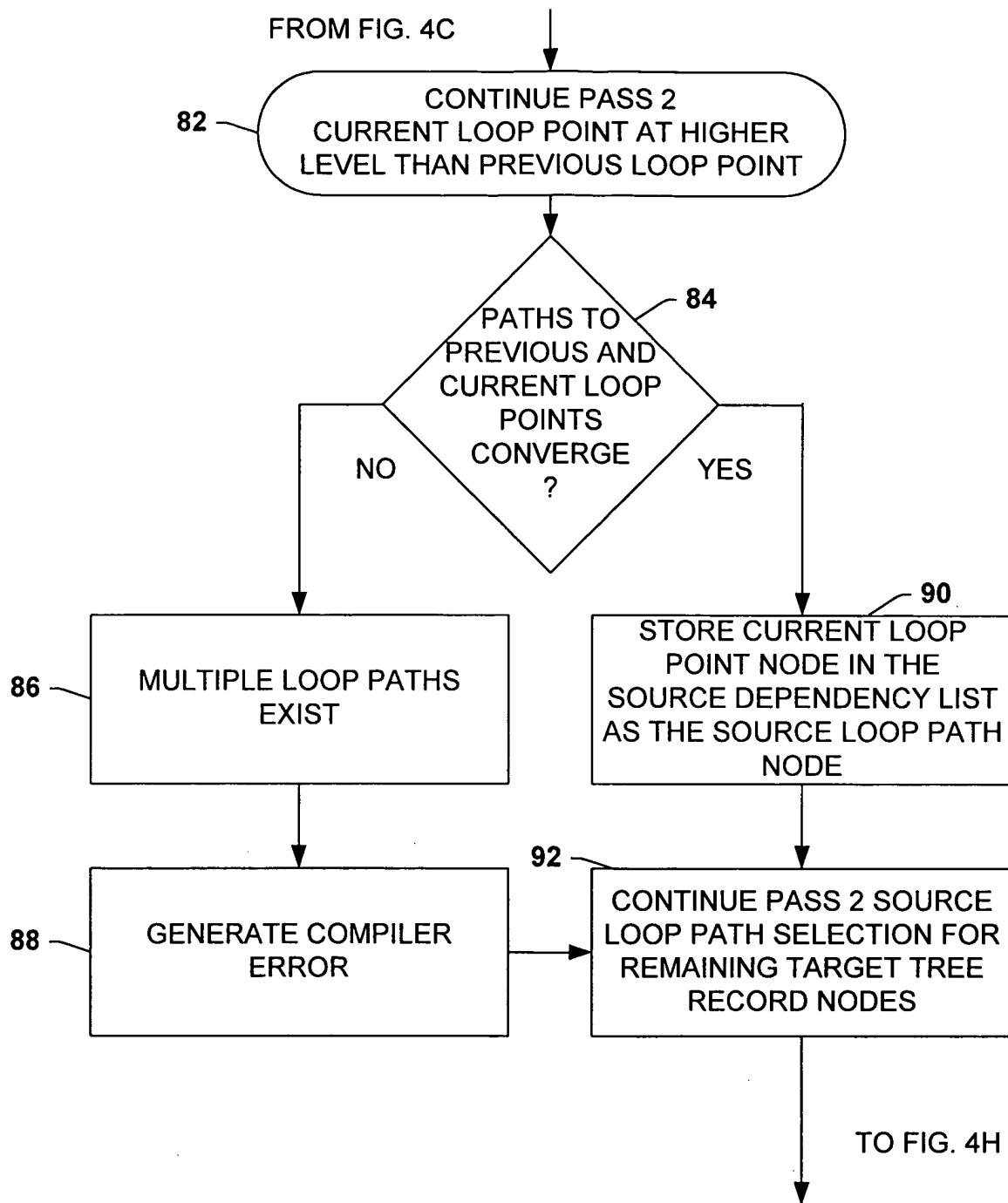


FIG. 4D

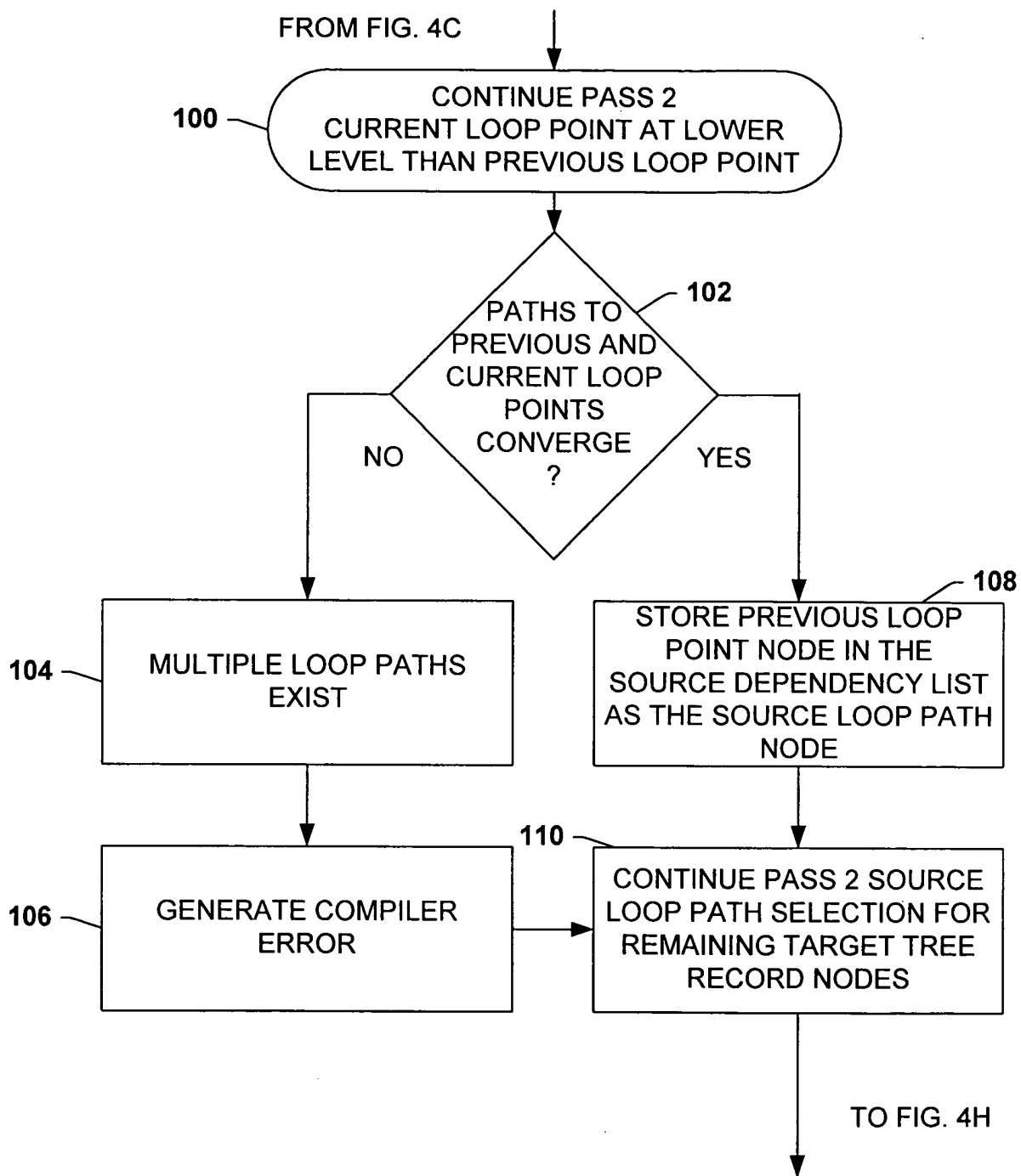


FIG. 4E

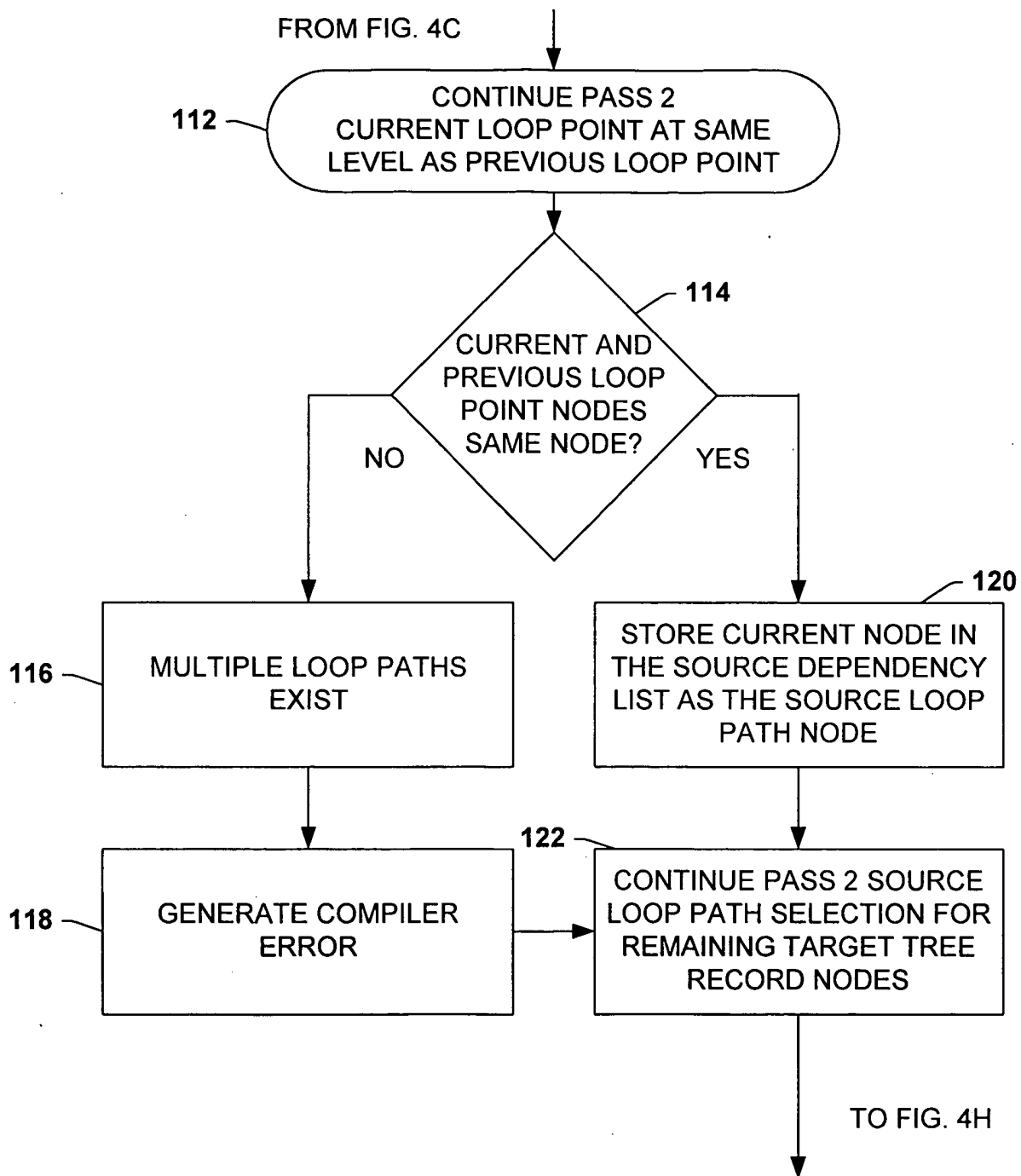


FIG. 4F

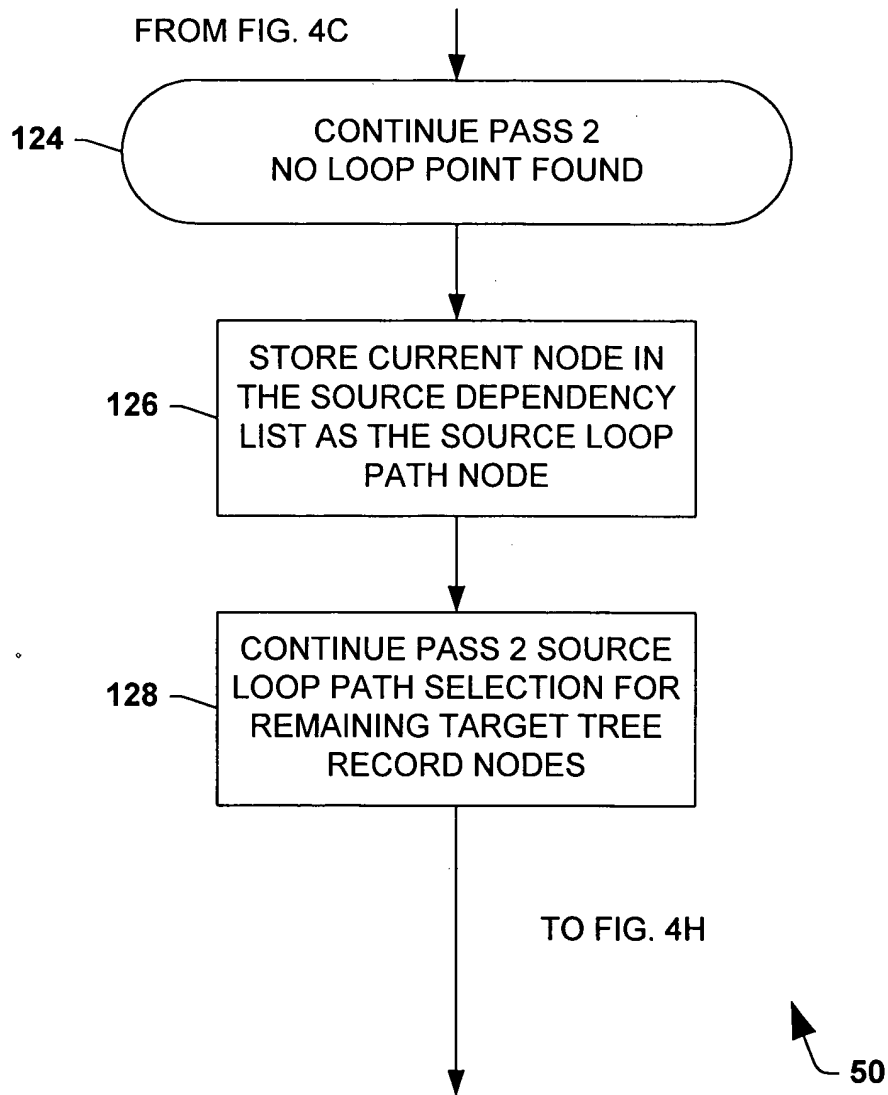


FIG. 4G

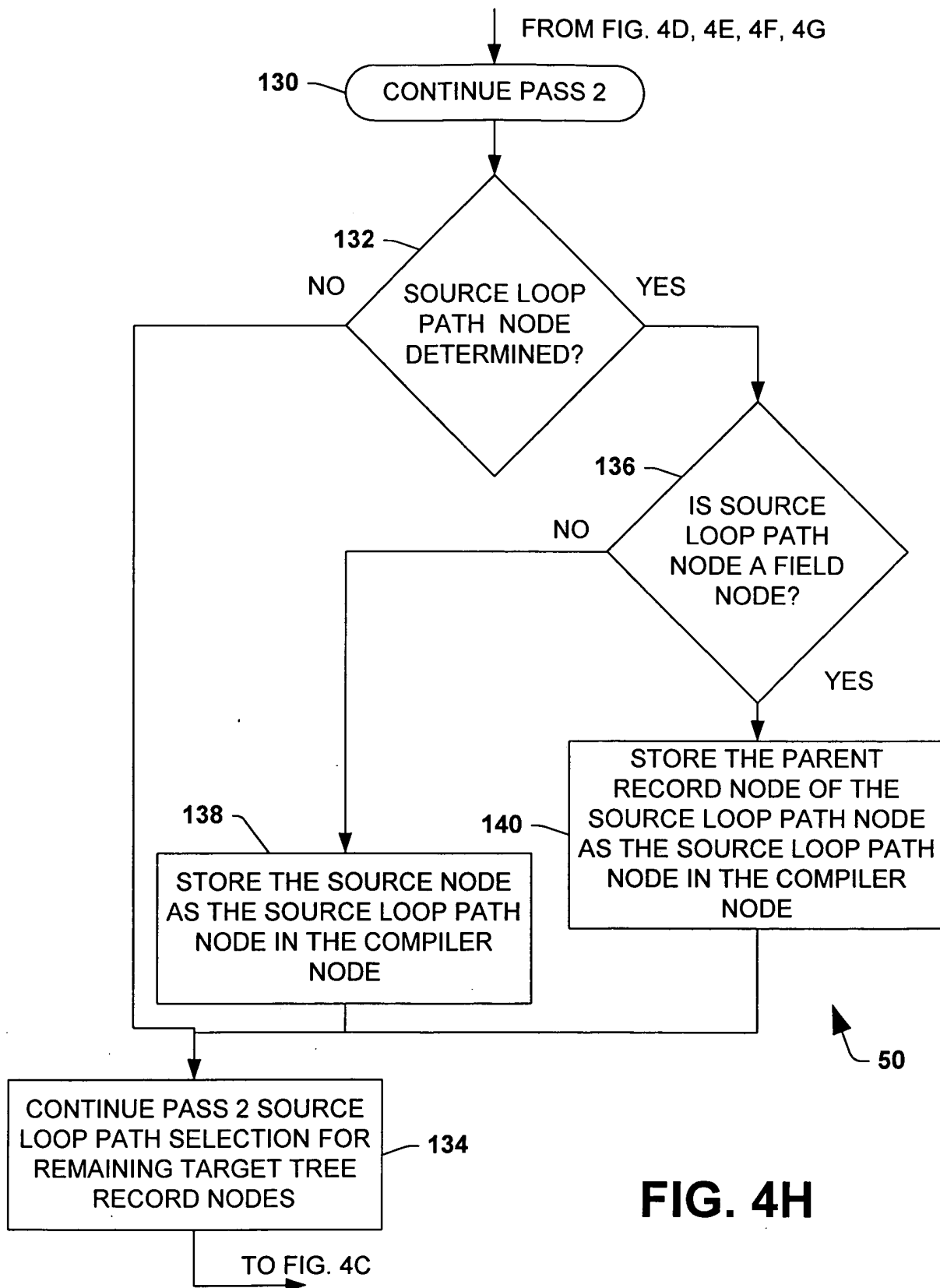


FIG. 4H

00000000-00000000

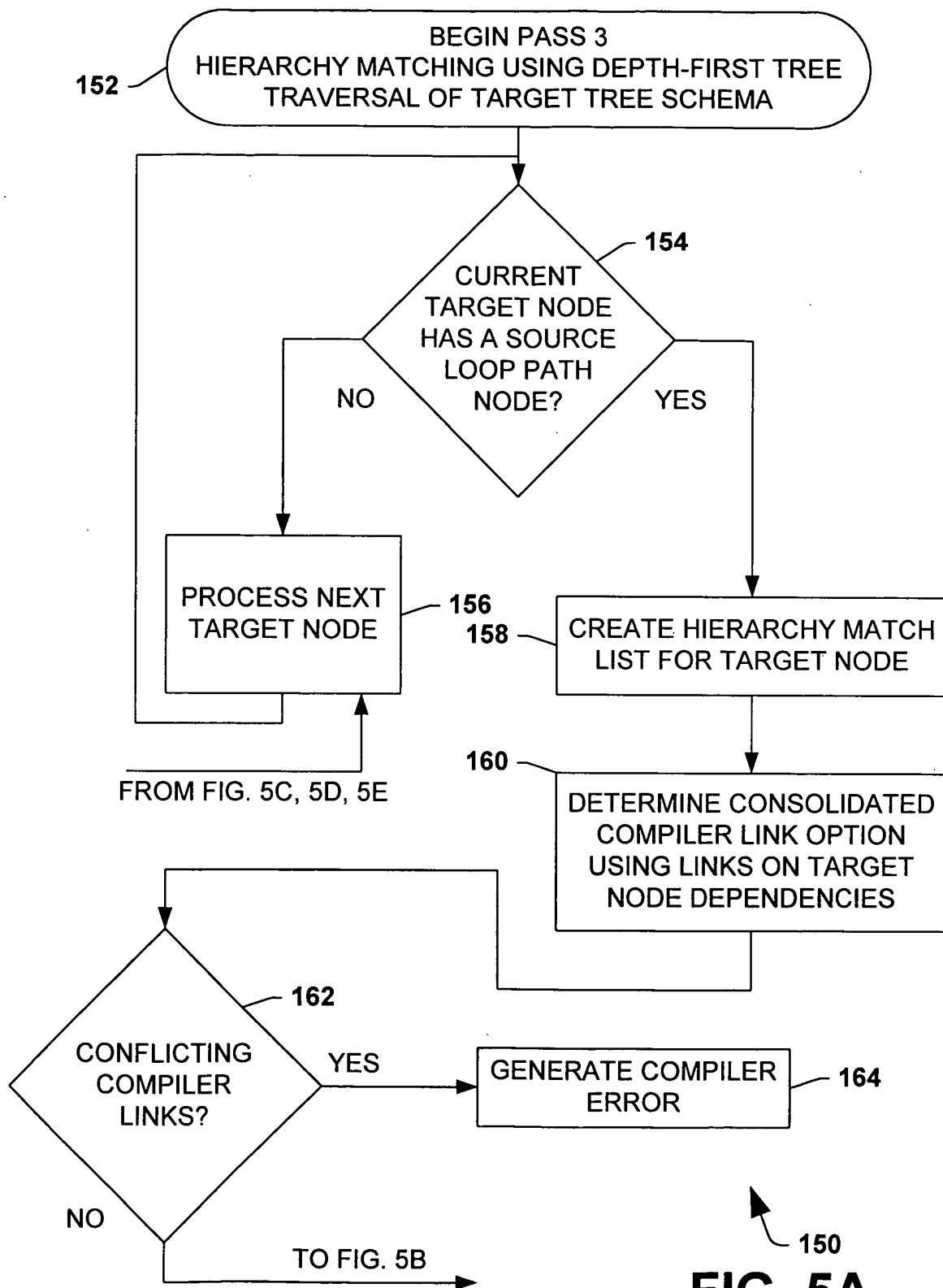


FIG. 5A

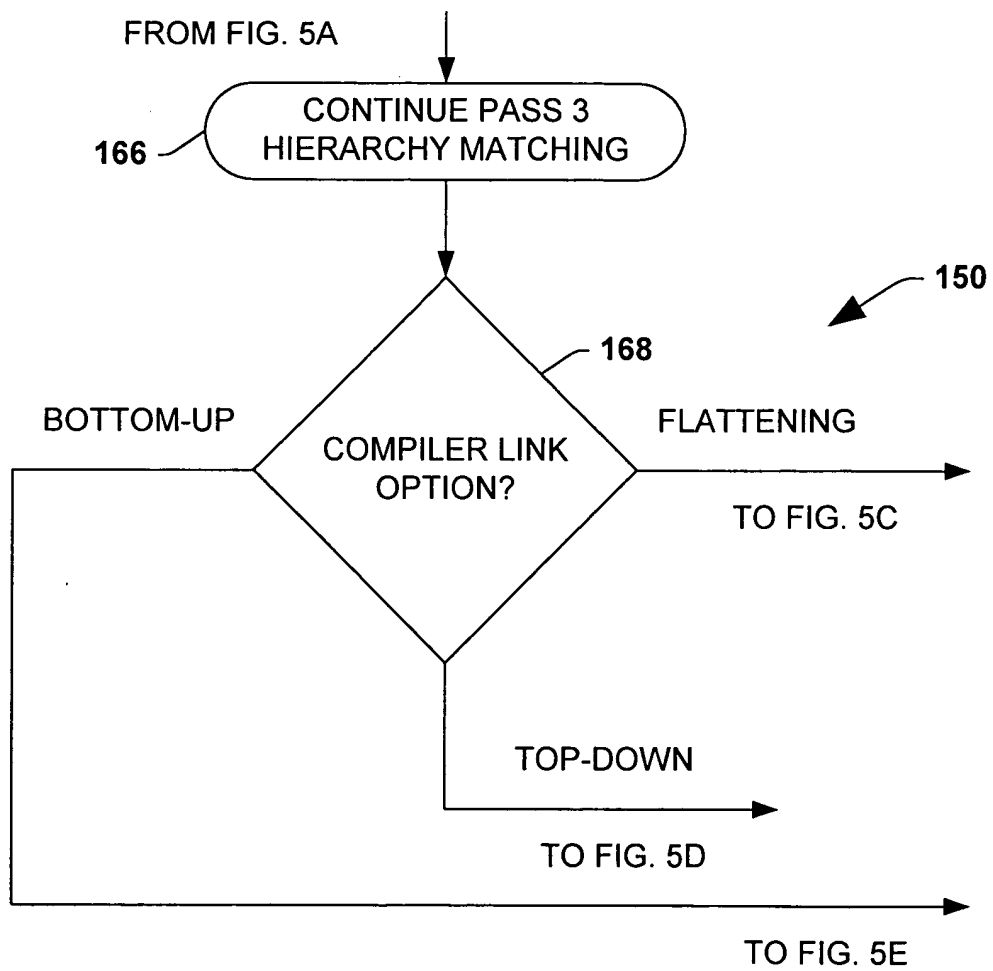


FIG. 5B

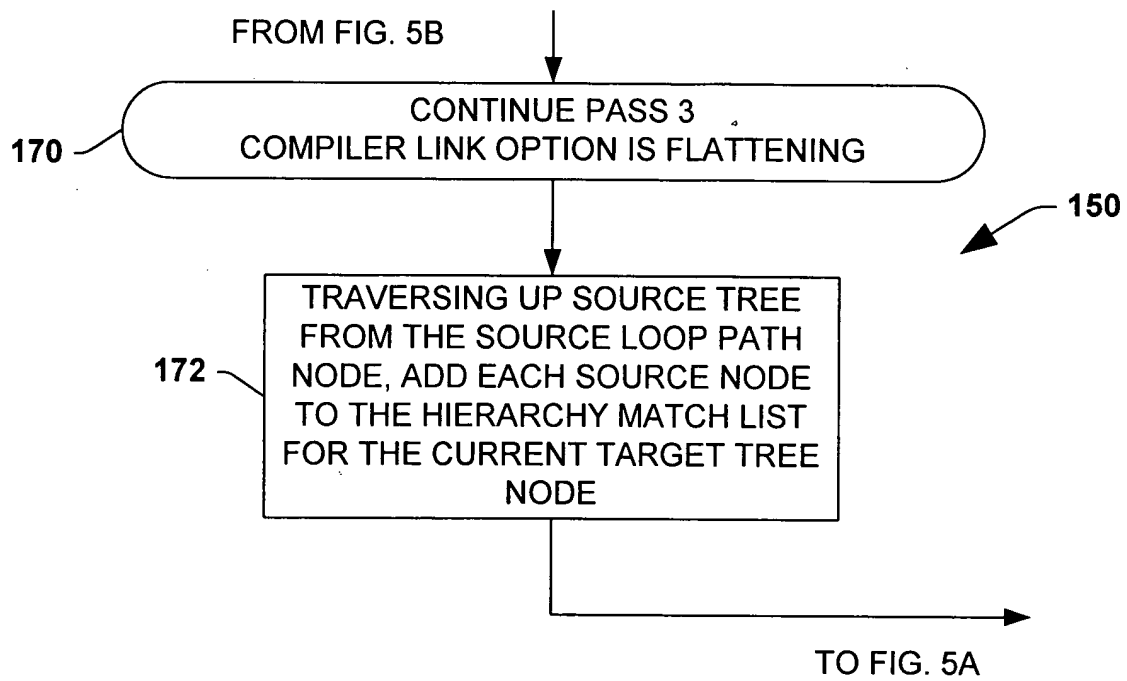


FIG. 5C

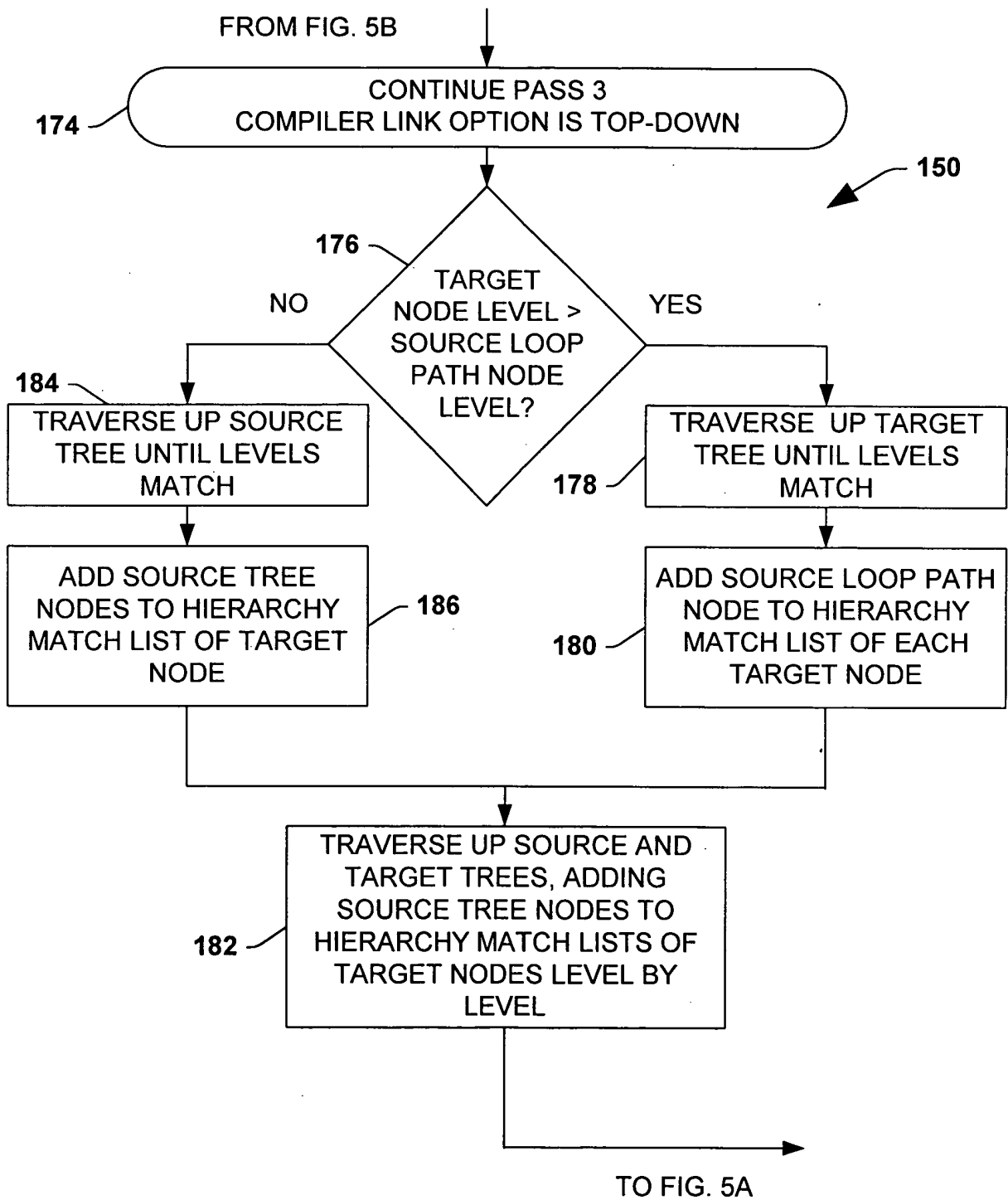


FIG. 5D

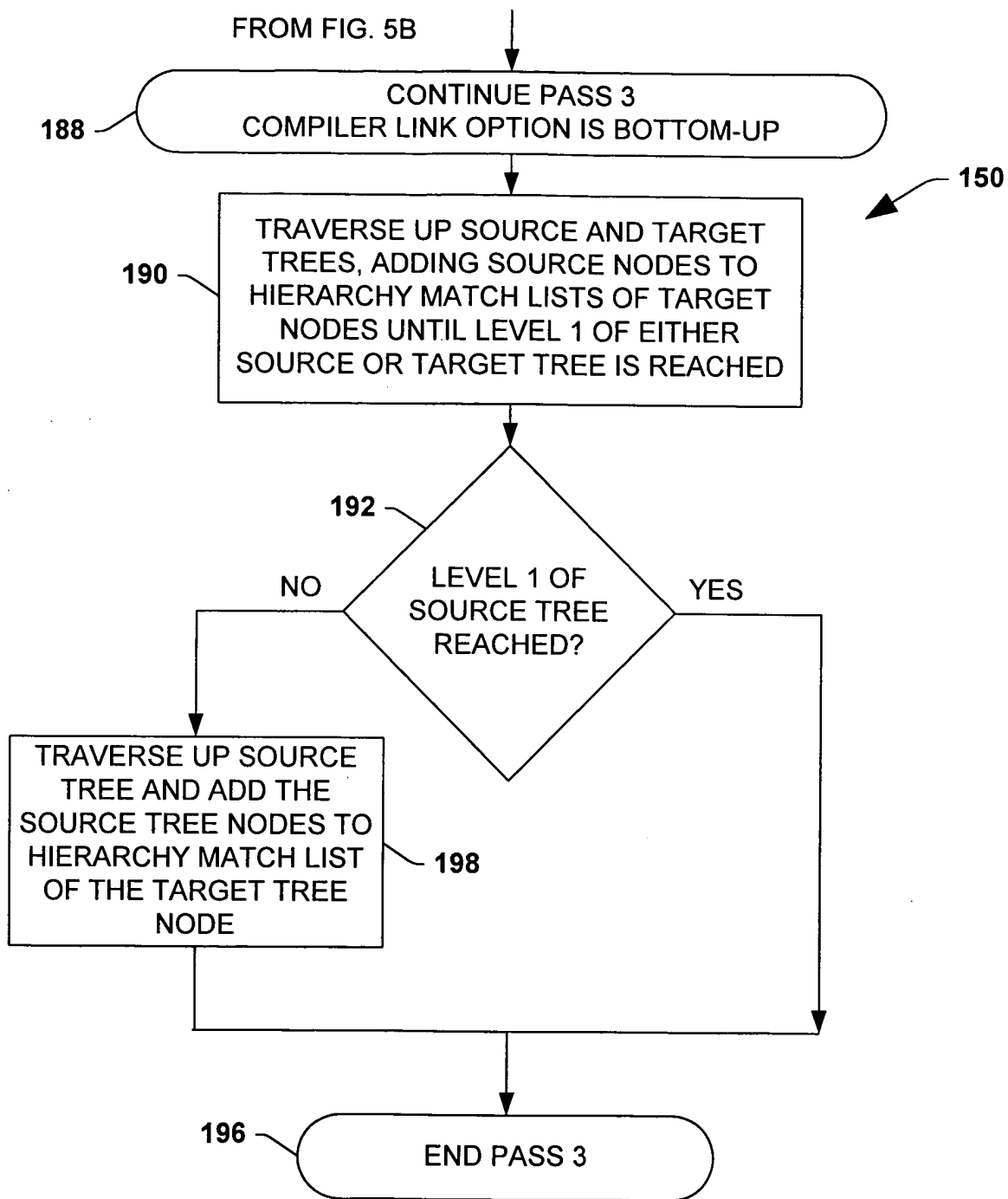
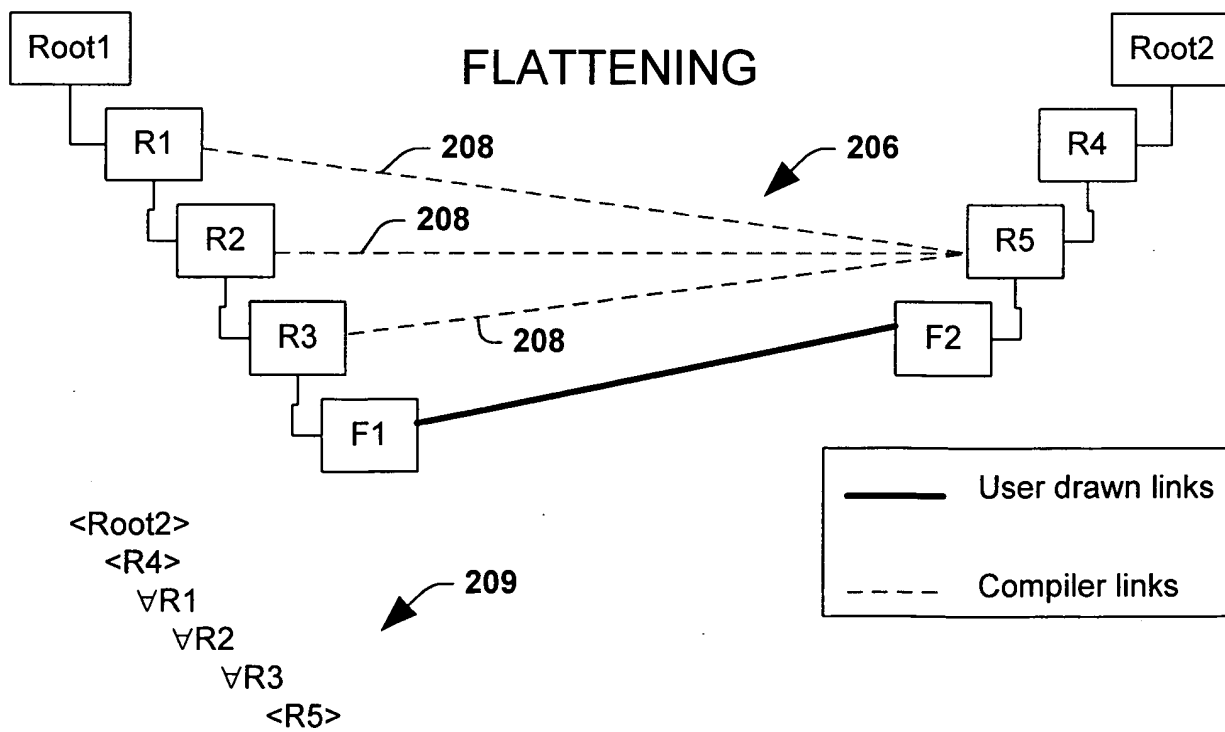
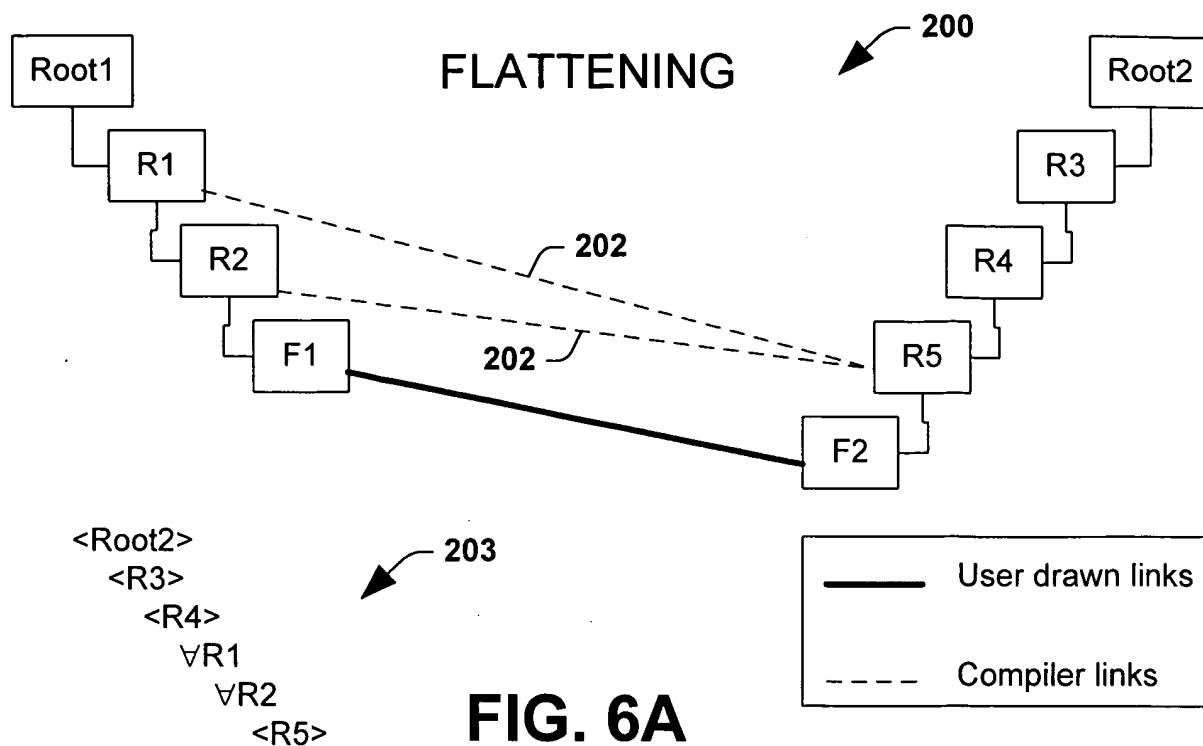


FIG. 5E



The diagram illustrates a top-down tree structure. At the top, two root nodes are labeled "Root1" and "Root2". Below "Root1" is a sequence of nodes: "R1", "R2", and "F1". Below "Root2" is a sequence of nodes: "R3", "R4", "R5", and "F2". A solid line, labeled "213" with an arrow, connects "F1" to "F2". Dashed lines, labeled "212" with an arrow, connect "R1" to "R3", "R2" to "R4", and "F1" to "R5". The text "TOP-DOWN" is centered at the top. In the bottom left, a list of nodes is shown with universal quantifiers: "<Root2>", "∀R1", "<R3>", "∀R2", "<R4>", and "<R5>". A legend in the bottom right shows a solid line for "User drawn links" and a dashed line for "Compiler links".

Root1

Root2

TOP-DOWN

214

216

216

216

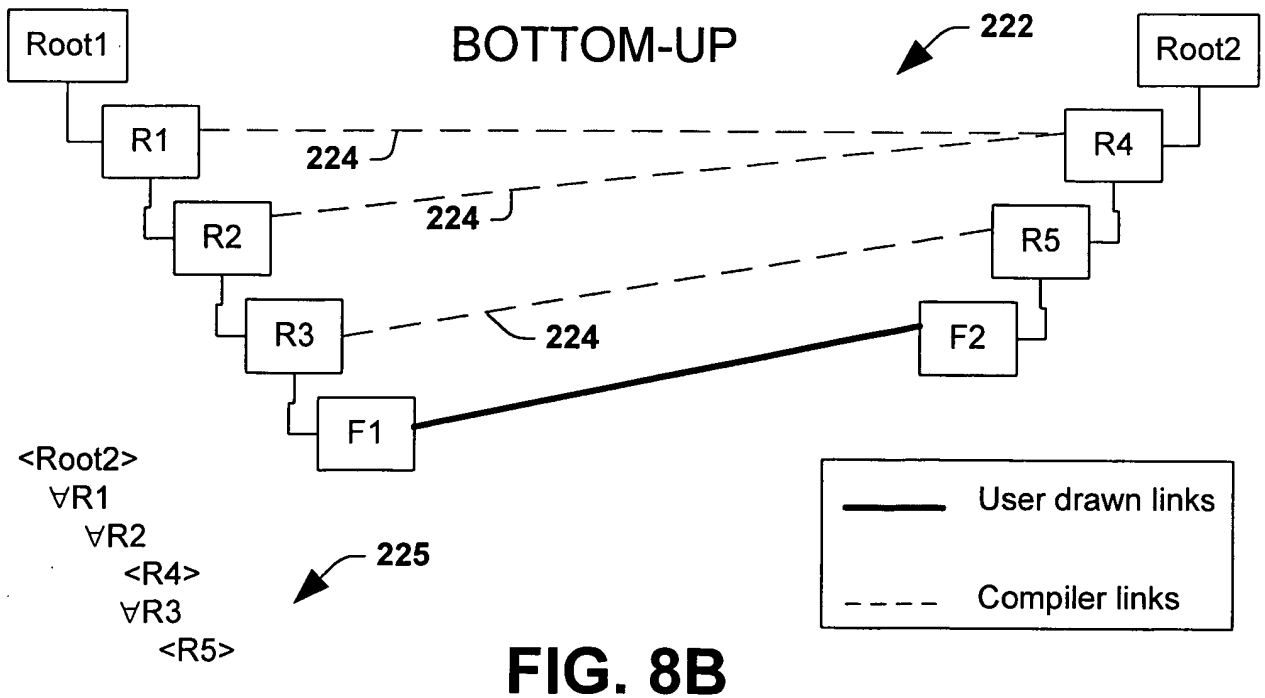
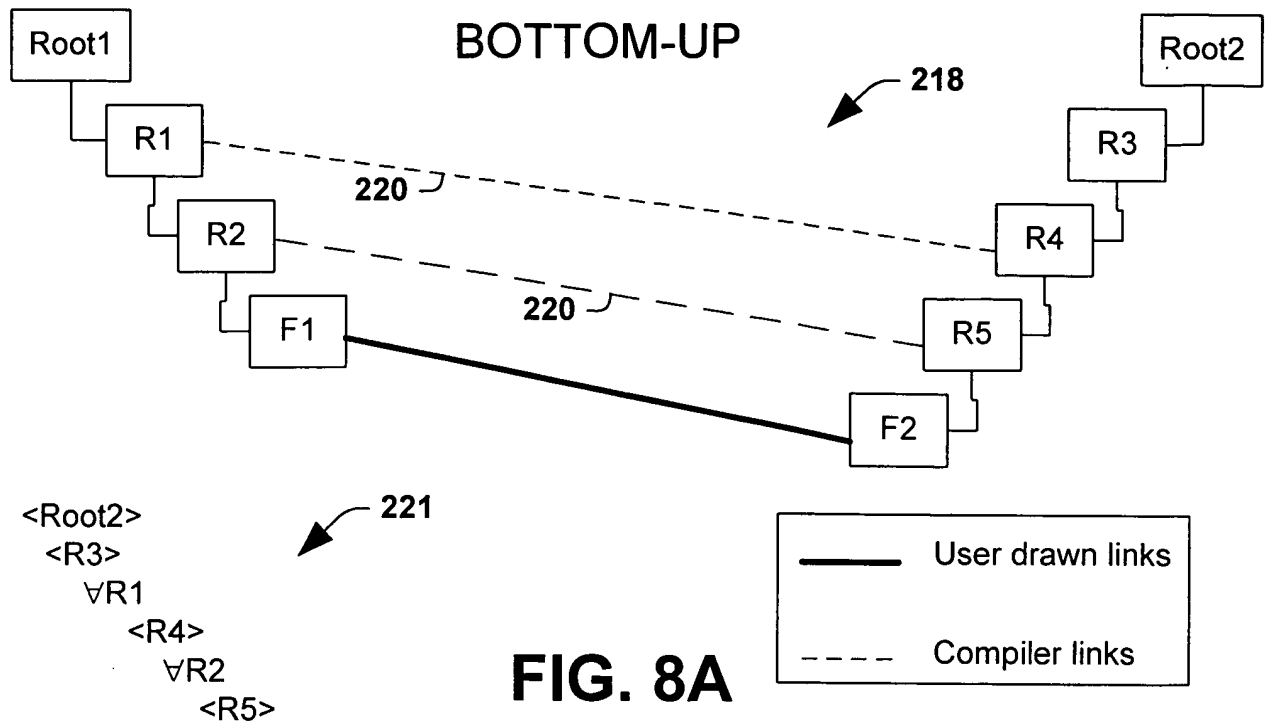
217

— User drawn links

- - - Compiler links

<Root2>
 $\forall R1$
 <R4>
 $\forall R2$
 $\forall R3$
 <R5>

FIG. 7B



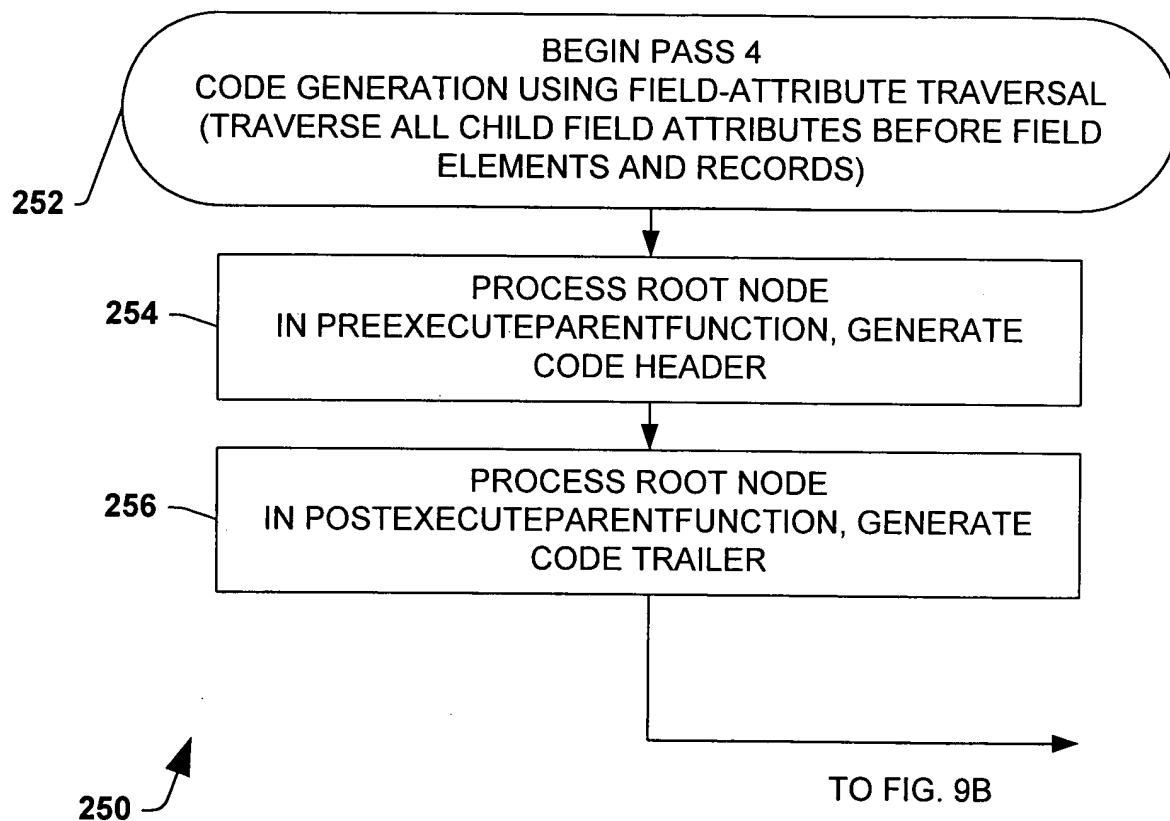


FIG. 9A

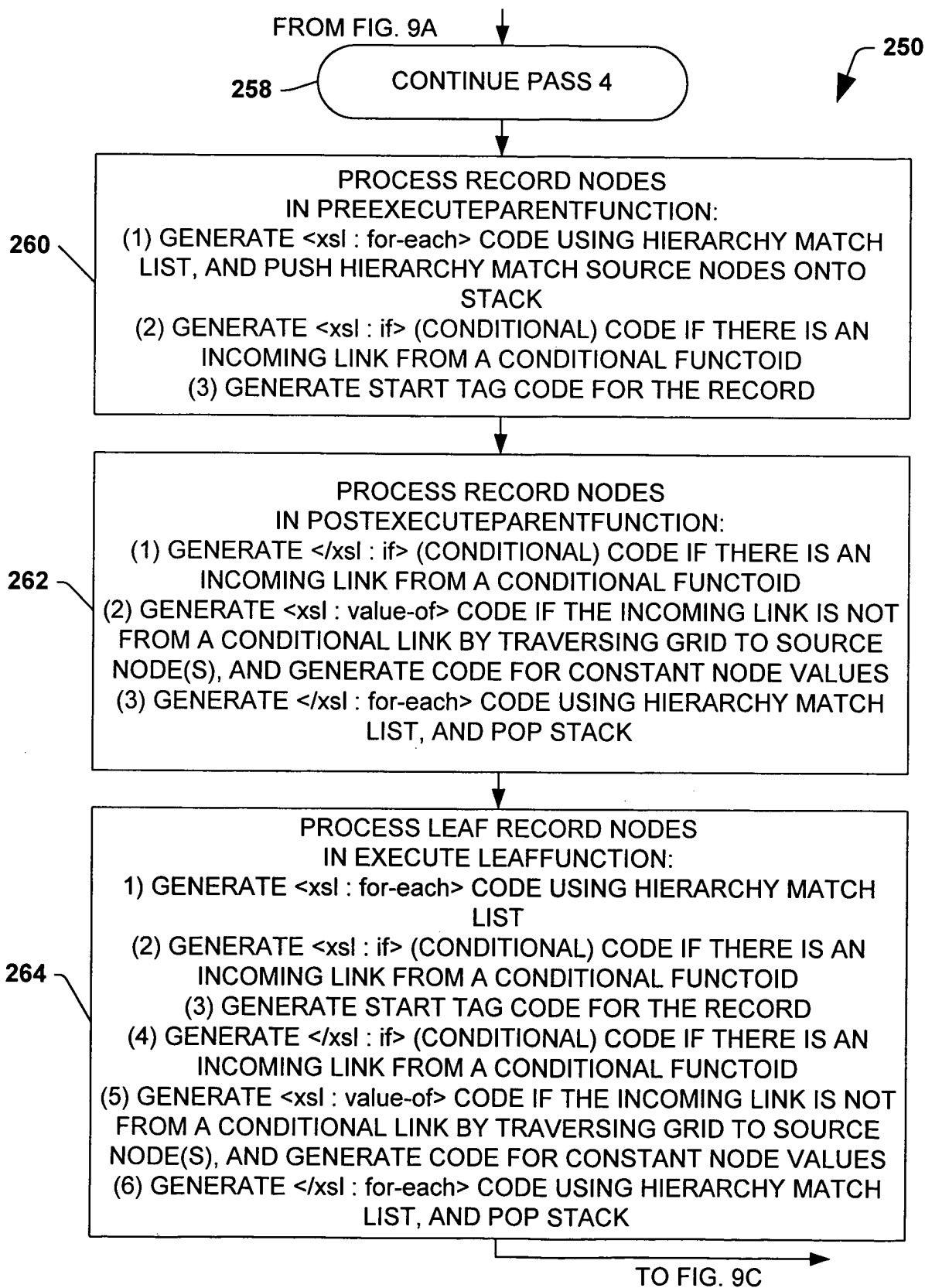


FIG. 9B

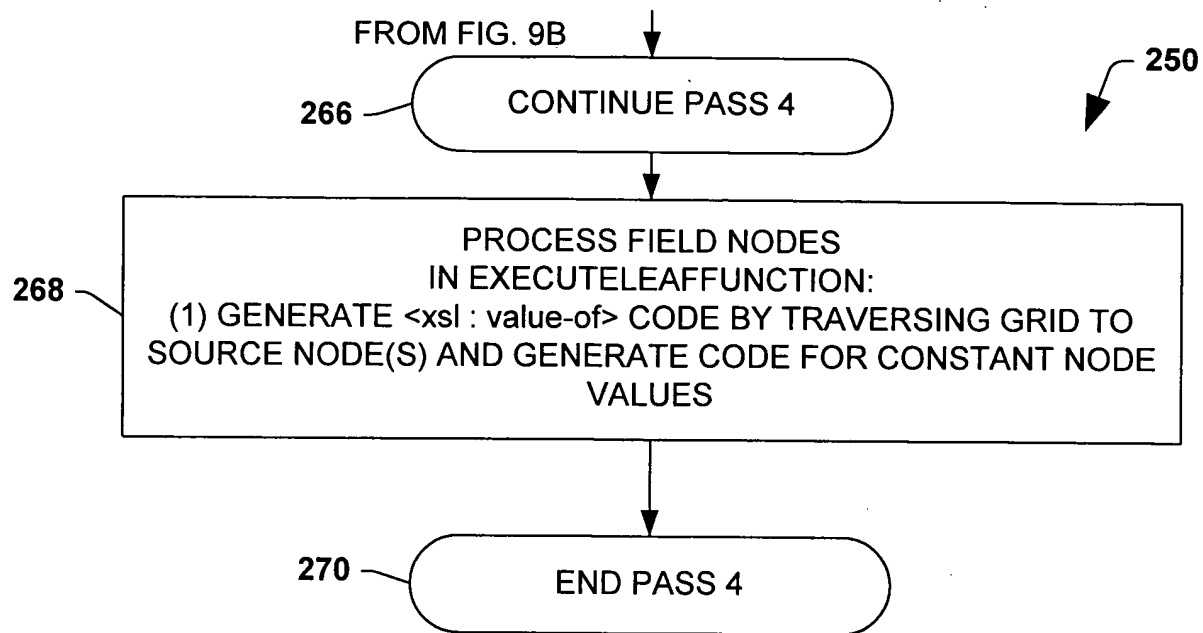


FIG. 9C

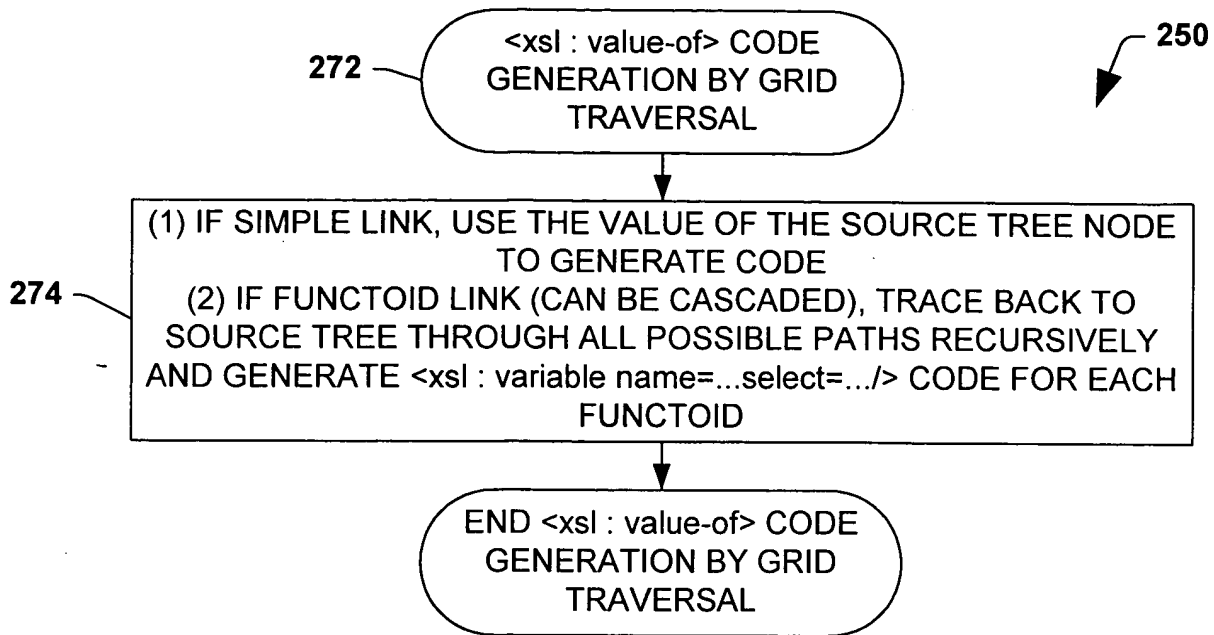


FIG. 9D

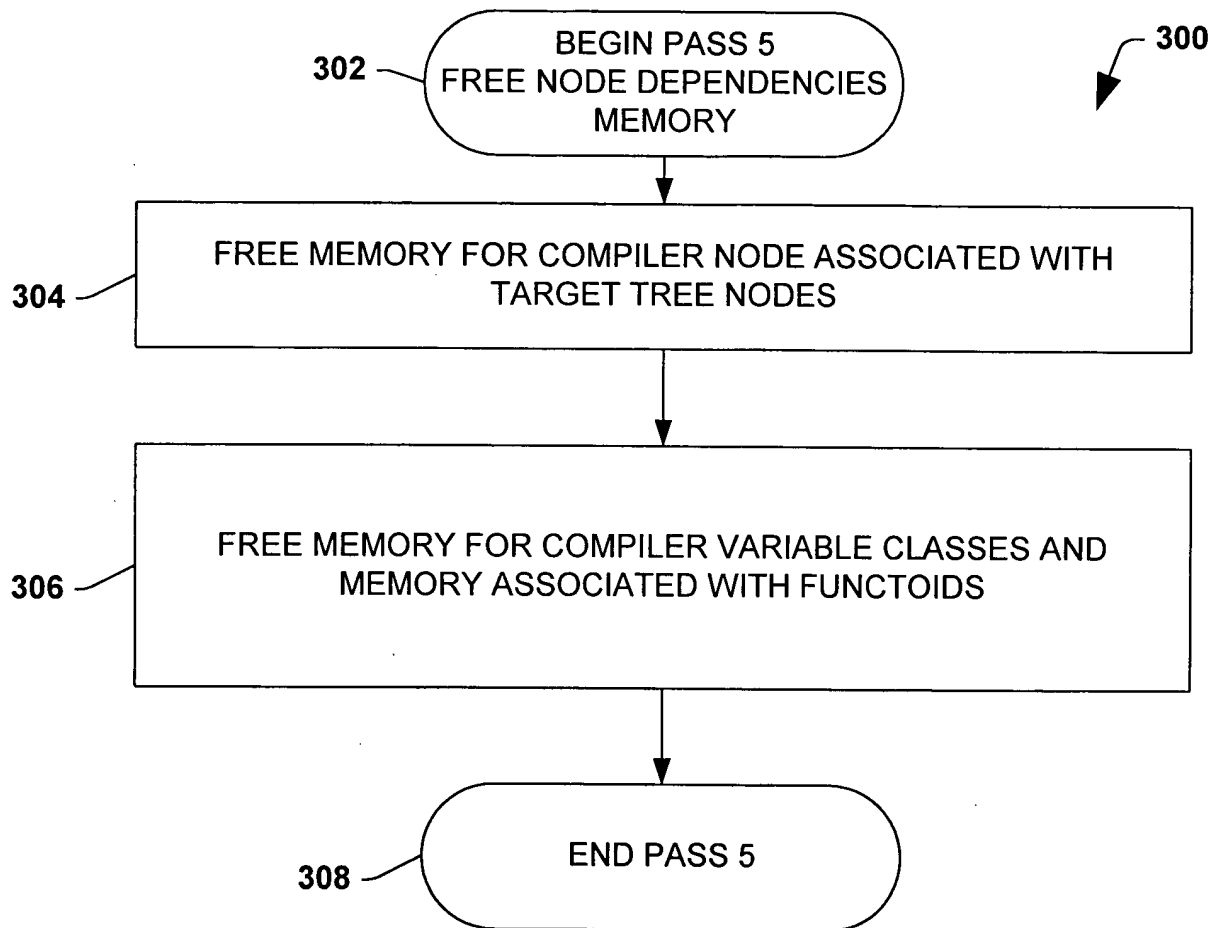


FIG. 10

FIG. 11

FIG. 12

The diagram illustrates a query processing system architecture. At the top, there are two main data sources, X1 and X2, each represented by a cylinder icon. X1 is connected to RECORD1, and X2 is connected to RECORD3. RECORD1 and RECORD3 are represented by cylinder icons with a minus sign. RECORD1 is connected to FIELD1, FIELD2, and FIELD3. RECORD3 is connected to FIELD6 and FIELD7. RECORD2 and RECORD4 are also represented by cylinder icons with a minus sign. RECORD2 is connected to FIELD4 and FIELD5. RECORD4 is connected to FIELD8 and FIELD9. FIELD1, FIELD2, and FIELD3 are connected to a plus sign operator (+), which is labeled V1. FIELD6 and FIELD7 are connected to a multiplication operator (X), which is labeled V2. FIELD4 and FIELD5 are connected to a minus sign operator (-). FIELD8 and FIELD9 are connected to a division operator (/). The operators (+, X, -, /) are represented by cube icons. The output of the system is shown at the bottom as three arrows pointing right, labeled 382, 380, and 384. The arrows 382 and 380 are connected to the output of the multiplication operator (V2), and arrow 384 is connected to the output of the division operator (/).

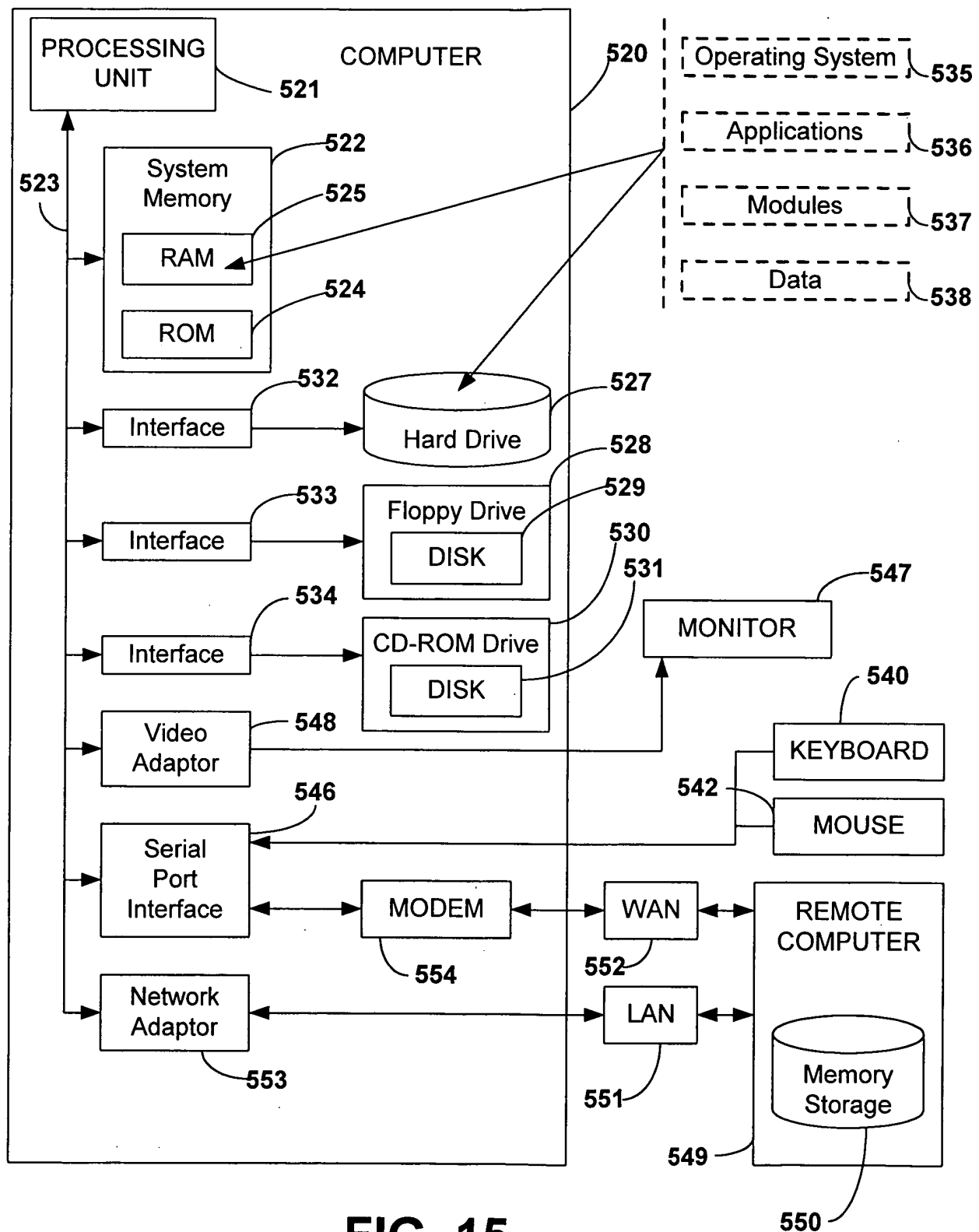


FIG. 15